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*On a Deposit containing Shells and Animal Remains at Newhaven in Sussex.* By Col. BEAUCHAMP WALKER, F.A.S.L., Assistant Quartermaster-General, and Lieut. ARDAGH, R.E. Communicated by Professor R. OWEN, F.R.S., Hon.F.A.S.L. With *Notes upon the Animal Remains*, by C. CARTER BLAKE, Esq., F.G.S.; and *on the Condition of Deposit*, by W. TOPLEY, Esq., F.G.S.

*No. 1. Colonel Walker to C. Carter Blake.*

“Shorncliffe, January 5th, 1865.

“DEAR SIR,—I have been recommended by Professor Owen to send to your Society a copy of a memo. which I forwarded to him of remarks on a deposit found at Newhaven, and which was brought to my notice last Saturday when making an official visit to that station. If I can afford any further information or assistance in this matter I beg that you let me know.

“Very faithfully yours,

“BEAUCHAMP WALKER, Colonel,

“A.Q.M. Gen. South Eastern Division.”

*No. 2. Enclosure referred to in No. 1.*

“Shorncliffe, January 5th, 1865.

“There is at Newhaven, close to the site of the fort now under construction, a very interesting instance of the kitchen-midden. The summit of the hill above the government works is crowned with an old fortification, from its construction, of a date probably anterior to that of the Roman occupation of Britain. Immediately in the face of the cliff, which is here full of faults, and which has manifestly receded, even in quite modern times (not so much alone from the encroachment of the sea as from land springs and other defects in the cliff itself) to seaward of the line of the old earthen wall, a band of mixed shells, bones, and pottery of decreasing thickness from centre to ends is found about twenty inches below the surface of the ground. Under this layer is a thickness of about the same depth of earth, then a thin layer of broken stones or pebbles, and underneath this the natural strata of the coast formation.

“This is not the only place in which remains of food deposits occur in the vicinity of this old work, which has been bisected by the ditch of the new fort, but the place I refer to is, from its having been exposed by the degradation of the face of the cliff, the most accessible and certain ground for further investigation. The bones appear to be those of both birds and animals; the shells those of the ordinary shell fish of the coast, oyster, mussels, and limpets; and the pottery of a rude description, but well baked and retaining its colour.

“The most singular relic which I picked up in the course of a short official visit to Newhaven, was a boar's tusk, nearly three inches in length, and very perfect, which I found lying on the surface of the ground where a deep excavation had been made for the magazine. I could not learn positively that any metal remains had been preserved, though it was said that bits of bronze had been discovered, but I have

requested the resident officer of engineers to keep me informed of future discoveries.

“BEAUCHAMP WALKER, Colonel., A.Q.M. Gen.”

*No. 3. Colonel Beauchamp Walker to Professor Owen, F.R.S.*

“Shorncliffe, January 11th, 1865.

“DEAR SIR,—I have heard to-day from Lieut. Ardagh, who tells me that a pair of human thigh bones (he is told) were turned up about three feet below the surface a few days since, but he cannot trace them. The fact is there are about 250 civilian workmen in the fort, over whom we have control, and they make away with all they can conceal. The military superintendence is represented by one lieutenant and one sergeant of engineers.

“I hope, however, in a few days to be able to supply all you require, and also to furnish further information to the Anthropological Society, and if my duties here will permit me I shall pay another visit to Newhaven.

“I remain, dear sir, very faithfully yours,

“BEAUCHAMP WALKER, Colonel.”

*No. 4. Lieutenant Ardagh to C. Carter Blake.*

“Royal Engineer Office, Newhaven Fort, Jan. 20th, 1865.

“SIR,—I have this day sent to Professor Owen a collection of bones, teeth, pottery, etc., which I made from the cliff at Newhaven, referred to in Colonel Beauchamp Walker’s communication to you. As I have not much time at my disposal, I must refer you to the report which I forwarded to Professor Owen for a description of the remains. The sections, etc., which you desire are contained therein. It is impossible to say in what stratum the tusk which Colonel Walker sent to you was found, as it was thrown out by one of the navvies from a deep excavation. I have forwarded another perfect specimen which I found myself, with the pottery and other articles in the lower vegetable soil under the shell deposit.

“If you require further information I shall be happy to afford it whenever I have time at my disposal.

“I remain, yours very sincerely,

“C. Carter Blake, Esq.

“JOHN C. ARDAGH, Lieut. R.E.”

*No. 5. Lieutenant Ardagh, R.E., to Professor R. Owen, F.R.S.*

“Royal Engineer Office, Newhaven Fort, Jan. 20th, 1865.

“SIR,—I have the honour to inform you that, in accordance with a wish expressed by Colonel Beauchamp Walker, C.B., I have made an examination of some recent deposits in this neighbourhood, of which you will find a description in the accompanying report; and that I have this day sent by rail, addressed to you, at the British Museum, a box containing the objects which I found.

“Should it be considered desirable to pursue the investigation on the spot, or to report on the similar objects contained in the museums of Lewes and Brighton, I will be happy to afford all the assistance in my power to forward an inquiry on the subject, which is one in which

I take a considerable interest. I should be much gratified by hearing your opinions ; and,

“ I have the honour to be your obedient servant,

“ JOHN C. ARDAGH, Lieut. R.E.

“ Professor Owen, F.R.S., etc., British Museum.”

*Examination of the Upper Portion of the Cliff, and Remarks on objects discovered therein, 17th Jan. 1865.* By Lieut. ARDAGH, R.E.

The cliff at Newhaven shows chalk to a height of about 100 feet above the sea level ; above that, plastic clay of variable character and thickness. As is usual on those parts of the coasts of Sussex and Kent where no artificial means have been applied to guard against the encroachments of the sea, a gradual destruction of the cliff by that element continues to take place, the simplest proof of which lies in the fact, that during the period 1849 to 1864 the chalk marks used by the coastguard to indicate the pathway along the cliff at night, were twice moved landwards in consequence of the slips of the cliff. The plastic clay is also acted on by land springs which melt away the lower part of this formation and cause a subsidence or rupture of the surface. In this way the sections of the more recent strata are for the most part fresh and well defined.

The Castle hill at Newhaven, before the introduction of artillery, was a very strong military position. A natural formation resembling the ruined parapet and ditch of an early encampment has evidently been taken advantage of and improved by art ; for the sections of the cuttings now being made for the ditch of a new fort lead at once to that conclusion. The space now enclosed by the trace of the ancient mound is long and narrow, but it must at one time have been large enough to enclose a considerable village. The greater part of the site has however long fallen a prey to the waves, and the cliff now presents a section not far from, and parallel to, the land front. In this section the search was made, and the position of the discoveries will be best understood by reference to the sketch which I have made to explain the formation of the ground.

It is notorious in this neighbourhood that remains of animals and traces of human agency are abundant on the site in question ; and I conclude that the Museum of the Sussex Archæological Society at Lewes Castle, and that in the Pavilion at Brighton, probably contain a much better class of specimens than I have found in my short search.

Colonel Beauchamp Walker, however, suggested that it might be desirable to send some specimens to the British Museum, and to the Anthropological Society ; and as I am convinced that important discoveries are often buried in local museums, I concur with this suggestion, although I anticipate that the examination which I have made will throw no new light on the subject, as the specimens are so obviously recent as to belong to the historic age.

I expect, however, that in the course of the excavations for brick earth in the silt deposit of the River Ouse, some interesting discoveries may be made. Already a single bone, which I presume to be

one of the cervical vertebræ of a deer, has been discovered, and I have directed that all remains of whatever description should be carefully preserved. Half of a handmill or quern has been found in the excavations from the ditch. Not having been present at its discovery, I cannot give any information beyond that it lay within a few feet of the surface. In the section attached, the strata have been numbered for convenience of reference.

No. i is a vegetable mould of ordinary character, bound together by numbers of small roots, and containing *very few* remains, and those invariably in the lowest part.

No. ii is composed of the shells of the common mussel, with large numbers of limpets, and less frequently oyster shells. It answers to the description of the shell deposits in the Danish "kitchen-middens" given by Lyell, to the best of my recollection. [I may here mention there exists on the side of the cliff at Milford Haven, on the west side of Angle Bay, a deposit principally of oyster shells, three or four feet in thickness, and now completely covered with surface soil. I observed this before Lyell's book was published, and have since had no opportunity of examining it. I can, however, refer to friends of mine in the neighbourhood and obtain further information if it is considered desirable.]

No. iii is a vegetable soil, the organic parts of which have been more completely disintegrated and decomposed than No. i. In it occur bands of carbonised matter; flints broken in such a way as to lead one to suspect human agency; flints cracked by the action of heat; portions of clay more or less hardened or altered in colour, to bright reds and yellows, by the same cause; occasionally limpets and other shells; and nearly all the specimens which have been forwarded, including those of the most finished description of pottery which were found; so that for practical purposes all the specimens may be considered to have been found either in this stratum or in the shell bed which overlays it.

No. iv is formed of pebbles and flints partly waterworn; it is of irregular thickness, varying from three to twelve inches.

No. v is the common plastic clay, and is interspersed by layers of loam shingle and variegated sand, as is usual in that formation.

The length of the portion of the cliff which furnished the specimens forwarded is about one hundred yards, but there is reason to suppose that a search made at any point within the contour of the entrenchment would be equally successful, as the supply appeared to be independent of the position.

#### *Description of Specimens.*

*Pottery.*—First variety. Two fragments of excellent red pottery, with uniform smooth face, similar to some Etrurian vases.

Second variety. Red pottery of the same quality as ordinary flower pots.

Third variety. A black or dark grey pottery, occurring in very great abundance; some specimens well finished.

Fourth variety. A yellow or tawny-coloured description.

*Metal*.—1. Two pieces of decomposed copper, or brass ornaments or coins.

2. A piece of oxidised iron (this specimen is doubtful).

3. A piece of lead in the form of a hook.

*Bones*.—These must speak for themselves, as I can make no attempt to classify them.

*Flints*.—I have selected some flints from the same strata as the bones, in the possibility of their being considered to be evidence of human handicraft. For my own part I consider it to be highly improbable.

*Shells*.—A few limpets and oysters from No. II are sent, merely to show what state the rest are in. The mussels are so much decomposed that they do not bear handling, although the bright mauve colour of the enamel is still visible.

*Note upon the Animal Remains.* By C. CARTER BLAKE, F.G.S.

The animal remains all consist of the existing domesticated animals. Bones of the domestic pig (*Sus scrofa*) are very frequent; some of these, especially the long bones, have been split longitudinally to extract the marrow, and exposed to the action of fire. Some teeth and fragments of bone exist of the domestic ox (*Bos taurus*). These do not appear to have been burnt, although one of the bones has been split to extract the marrow. The proportions of the bones of ox indicate individuals slightly larger than most existing breeds. Some bones of goat (*Capra hircus*) are also found, one especially, the left parietal and portion of the occipital and petriotic bones, which has evidently belonged to an individual whose skull has been cloven vertically by one chopping blow; this having, in my opinion, been performed by an instrument closely resembling the ordinary butcher's cleaver. I am enabled to publish the following correct list of the animal remains, through the kindness of my friend, Mr. William Davies, of the British Museum.

Last left lower molar of *Bos*; exoccipital and basioccipital bones, ditto; condyle of left lower mandible, ditto; fragment of left lower mandible, ditto; fragment of left lower mandible (angular piece), ditto; distal articular end of radius, ditto; head of femur, ditto; portion of lower end of right humerus (ditto); cervical vertebra, ditto. Part of left parietal of goat, *Capra hircus*. Antler of goat (young). Portion of pelvis (ilium) sheep, *Ovis aries*. Third cervical vertebra, sheep or goat (young); fragment of metacarpus, sheep or goat (young); fragment of metatarsus, sheep or goat (young). Glenoid process of hog, *Sus scrofa*; fragment of left lower jaw, ditto; symphysis of left lower jaw, with canine and first premolar, ditto; incisor of ditto; part of ulna of, ditto; portion of right side of pelvis of, ditto. Femur of dog, *Canis familiaris* (jun.); tibia of dog; fragment of pelvis of (?). Upper half of metacarpus of a bird.

The presence of these domesticated animals with fragments of Samian ware, although accompanied by evidences of a supposed rude type of flint implement, would not lead me to infer great antiquity for this deposit. The total depth of three feet three inches of super-

incumbent matter above the shingle bed is very significant, as indicating the rapidity with which the deposit has been formed.

*Notes on the Roman Remains found at Newhaven.* By WILLIAM TOPLEY, Esq., F.G.S., of the Geological Survey.

The South Downs generally are rich in Roman remains.\* The Rev. F. Spurrell has already described some discovered in 1852 at Newhaven.† It may be interesting to compare his account with that given in the present paper. They were found "in an upland meadow on the estate of W. Elphick, Esq.," and consisted of "tiles, coins, bullock's horns and bones, *flints* calcined and discoloured by heat; pieces of several kinds of grey pottery, of Samian red ware, and of an amphora; an arrow-head of iron, and some dozen nails and iron fragments; bones (not human) charred, and fish-shells quite perfect, though soft, of the mussel, oyster, whelk, cockle, periwinkle, and limpet; and in the shells, and in patches everywhere, coal-ashes. Every piece of iron was much corroded, and the pottery much worn, and found only in fragments. These Roman fragments formed part of a refuse place, or ash-pit." The author does not give the exact locality of this "find." It is not stated that the *flints* were *worked* in any way; but it is worthy of note that roughly-chipped flints are frequently found with deposits of Roman age. They occur in the Newhaven Cliff section (bed 3), and have been described by Mr. W. Boyd Dawkins from Romano-British graves at Hardham, near Pulborough.‡ I have found numerous *flint-flakes* in a field at the Hermitage, two miles west of Maidstone. Roman remains are frequently discovered around this spot.

The investigation of Roman antiquities in the neighbourhood of Newhaven affords a special interest, because this place (amongst many others) has been claimed as the site of the ancient city of Anderida, which, however, is now generally fixed at Pevensey. Information is much required upon the *Roman roads* of this district. Stukeley§ thinks the Hermenstreet started from the channel at Newhaven and ran due north through London. Probably, however, it divided into two branches at London, one going south-west to Chichester, and the other passing east and south-east to Pevensey. It is thus marked on Dr. Guest's map of "The Four Roman Ways."||

It is probable that in Roman times Newhaven levels were covered by the sea.¶ Dr. Mantell has described sections of this alluvium. It is certainly of comparatively recent date. In later times the outlet of the Ouse was at Seaford, being separated from the sea by a bank of shingle. Newhaven was then called *Meeching*.

The PRESIDENT said that papers of that kind were of great use, as serving to keep men alive to the importance of facts. The Society

\* See Horsfield's "Hist. of Sussex" (1835), vol. i, chap. 2; also Horsfield's "Lewes", vol. i, chaps. 3 and 4.

† Sussex Archæol. Collection, vol. v, p. 263.

‡ Ibid., vol. xvi (1864), p.

§ Itinerarium Curiosum (1724), p. 6.

|| Archæological Journal, vol. xiv (1851), p. 99.

¶ Horsfield's "Sussex" (1835), vol. i, p. 46.

wanted to keep on collecting facts. It was only by the collection of such facts they could hope to arrive at the solution of the problem of the history of the early inhabitants of this country. It was all the more satisfactory that the authors of the paper did not pretend to throw any light on the antiquity of man.

Rev. DUNBAR HEATH inquired whether the stratum of marine shells had been deposited since the days of the Romans, and whether it was supposed that such an extensive midden had been found since the time of the manufacture of Samian ware. He could not understand how a stratum of marine shells should extend over so large an area at such height above the sea level.

Mr. C. CARTER BLAKE stated that it was probable that in the Roman times the sea at Newhaven was at a higher level, relatively. There was no difficulty in accounting for the extension of the kitchen-midden horizontally, the difficulty was to account for the regular depth of the stratum.

Mr. MACKENZIE thought it was desirable they should, in the first place, determine what was meant by the term "kitchenmidden." Did it mean, in fact, archæval dust holes? If so, it would be only right, in that Society—where they professed to call a spade "a spade," and not "an agricultural implement"—to say so. Those dust holes had not produced much as yet.

Mr. HIGGINS contended that "midden" was a good old English word, and that the kitchen middens were heaps of refuse matter, and not holes.

Mr. C. CARTER BLAKE, referring to the sections showing the position and extent of the kitchen-middens described in the paper, observed that their correctness was confirmed by two very good geologists, and he expressed surprise that Mr. Heath should have disputed the existence of such a deposit of so large an extent, and at such an elevation, as there were numerous other similar cases.

Mr. SALMON agreed with Mr. Heath in thinking that there was a want of some satisfactory theory to account for the presence of shells and animal remains in such a position.

Mr. EDWIN COLLINGWOOD expressed a similar opinion.

Professor MACDONALD observed that beds of shells were often found lying along the coast of great depth, and for a considerable extent. They might be the refuse of an encampment, or of a place of residence.

The PRESIDENT hoped the discussion would do good in eliciting facts, for it was the duty of the Society to be sceptical, and not to receive any statement without careful examination.

*On a Kjökkenmödding at Santos, Brazil.* By Capt. R. F. BURTON,  
V.P.A.S.L.

"British Consulate, Santos, Brazil, Dec. 11th, 1865.

"SIR,—I send by this mail a small box of stone implements, etc., lately found by me and others in various parts of Santos Bay. The fifty leagues of coast from Angra dos Rios to the Rio Conanen was